

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.					
1. REPORT DATE (DD-MM-YYYY) 15-05-2014		2. REPORT TYPE FINAL		3. DATES COVERED (From - To)	
4. TITLE AND SUBTITLE  Air-Sea Battle through Joint Training:  Power Projection Sustainability				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)  Ryan T. Fulwider, LCDR, USN   Paper Advisor (if Any): Prof Michael McGauvran, CDR Hans Sholley				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Joint Military Operations Department Naval War College 686 Cushing Road Newport, RI 02841-1207		8. PERFORMING ORGANIZATION REPORT NUMBER			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION / AVAILABILITY STATEMENT Distribution Statement A: Approved for public release; Distribution is unlimited. Reference: DOD Directive 5230.24					
13. SUPPLEMENTARY NOTES A paper submitted to the Naval War College faculty in partial satisfaction of the requirements of the Joint Military Operations Department. The contents of this paper reflect my own personal views and are not necessarily endorsed by the NWC or the Department of the Navy.					
14. ABSTRACT  Critical reevaluation of the global strategic environment is imperative as U.S. Joint Forces draw down from military operations in Iraq and Afghanistan. Specifically, the Carrier Strike Group (CSG) must find innovative methods of sustaining power projection capabilities despite the U.S. Navy's reduction in overall force composition, delay of future technology, and the increased threat of anti-access/area denial (A2/AD) capabilities on the global stage. In order to provide Combatant Commanders with a CSG capable of projecting power while faced with A2/AD challenges, the Carrier Air Wing (CVW) must incorporate the Air-Sea Battle (ASB) Concept through enhanced joint training with the U.S. Air Force (USAF). This paper examines the ASB Concept as a solution for effective joint operations in an advanced A2/AD environment and outlines methods for joint force development to meet the power projection needs of Combatant Commanders. Through implementation of joint training with the USAF, focused on cross-domain operations, multi-level integration, and the incorporation of realistic A2/AD threat scenarios, the USN will develop a CVW that is networked, integrated, and capable of attack-in-depth in a complex A2/AD environment. Ultimately, the U.S. Joint Force's ability to adapt joint training to meet current economic and strategic challenges will ensure U.S. freedom of access and power projection in the global commons.					
15. SUBJECT TERMS Air-Sea Battle, anti-access, area-denial, cross-domain operations, joint operations, joint training, power projection, joint interoperability, multi-level integration					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT UNCLASSIFIED	b. ABSTRACT UNCLASSIFIED	c. THIS PAGE UNCLASSIFIED			Chairman, JMO Dept
				24	19b. TELEPHONE NUMBER (include area code) 401-841-3556

**NAVAL WAR COLLEGE  
Newport, R.I.**

**Air-Sea Battle through Joint Training: Power Projection Sustainability**

**by**

**Ryan T. Fulwider**

**LCDR, USN**

**A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.**

**The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.**

**Signature: \_\_\_\_\_**

**15 May 2014**

## **Contents Page**

Introduction	1
Background	2
The Air-Sea Battle Concept	6
Joint Training Implementation	8
Counterargument	15
Rebuttal	16
Conclusion	17
Recommendations	17
Bibliography	19

## **Paper Abstract**

### *Air-Sea Battle through Joint Training: Power Projection Sustainability*

Critical reevaluation of the global strategic environment is imperative as U.S. Joint Forces draw down from military operations in Iraq and Afghanistan. Specifically, the Carrier Strike Group (CSG) must find innovative methods of sustaining power projection capabilities despite the U.S. Navy's reduction in overall force composition, delay of future technology, and the increased threat of anti-access/area denial (A2/AD) capabilities on the global stage. In order to provide Combatant Commanders with a CSG capable of projecting power while faced with A2/AD challenges, the Carrier Air Wing (CVW) must incorporate the Air-Sea Battle (ASB) Concept through enhanced joint training with the U.S. Air Force (USAF). This paper examines the ASB Concept as a solution for effective joint operations in an advanced A2/AD environment and outlines methods for joint force development to meet the power projection needs of Combatant Commanders. Through implementation of joint training with the USAF, focused on cross-domain operations, multi-level integration, and the incorporation of realistic A2/AD threat scenarios, the USN will develop a CVW that is networked, integrated, and capable of attack-in-depth in a complex A2/AD environment. Ultimately, the U.S. Joint Force's ability to adapt joint training to meet current economic and strategic challenges will ensure U.S. freedom of access and power projection in the global commons.

## INTRODUCTION

*Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.*

- Italian Air Marshall Giulio Douhet (1928)

As U.S. Joint Forces draw down from military operations in Iraq and Afghanistan, reevaluation of the global strategic environment is imperative. Over the past decade, U.S. military operations in support of Operations ENDURING FREEDOM and NEW DAWN have been conducted in an environment where opposing forces possessed minimal anti-access/area denial (A2/AD) capabilities.<sup>1</sup> With the proliferation of A2/AD technologies by non-state actors and the development of A2/AD capabilities by state actors such as Iran and China, Combatant Commanders are confronted with the problem of maintaining the ability to project power in increasingly complex A2/AD environments.<sup>2</sup> The challenges created by the change in the global A2/AD environment were specifically addressed by former Secretary of Defense Leon Panetta in the 2012 Defense Strategic Guidance (DSG) that stated, "...the Joint Force will need to recalibrate its capabilities and make selective additional investments" to succeed in the mission of: "Project[ing] Power Despite A2/AD Challenges."<sup>3</sup>

At the heart of the U.S. Navy's (USN) power projection capability is the Carrier Strike Group (CSG) and its Carrier Air Wing (CVW). Due to the USN's reduction in overall force composition and delay of future technology, as well as the threat of increased A2/AD capabilities on the global stage, the CSG needs to find innovative methods of doing "more with less."<sup>4</sup> Fortunately, the Air-Sea Battle (ASB) Concept, released in March of 2013,

---

<sup>1</sup> Brendan P. Walsh, "Access Denied: Future Military Operations in an Anti-Access Environment," (Newport: Naval War College, April 5, 2011), 15.

<sup>2</sup> U.S. Department of Defense. *Sustaining U.S. Global Leadership: Priorities for 21<sup>st</sup> Century Defense*. (Washington, DC: U.S. Department of Defense, January 2012), 4-5.

<sup>3</sup> Ibid., 4.

<sup>4</sup> Daniel Goure, "A New Kind of CARRIER AIR WING," *United States Naval Institute*. Proceedings 138, no. 9 (September, 2012): 2.

provides Combatant Commanders with a concept that delineates “what is necessary for the joint force to sufficiently shape A2/AD environments to enable concurrent or follow-on power projection operations.”<sup>5</sup> In order to provide Combatant Commanders with a CSG capable of projecting power despite A2/AD challenges, the CVW must incorporate the ASB Concept through enhanced joint training with the USAF.

## **BACKGROUND**

*In the next 10 years, I expect the risk of interstate conflict in East Asia to rise, the vulnerability of our platforms and basing to increase, our technology edge to erode, [and] instability to persist in the Middle East . . . We will need new operational concepts, new thinking about how to employ our comparative advantages, and new organizations and formations. We will need the synergy of the Joint Force even more than we do today.*<sup>6</sup>

- General Martin E. Dempsey, U.S. Army  
18<sup>th</sup> Chairman of the Joint Chiefs of Staff

A2/AD capabilities are defined as “those which challenge and threaten the ability of U.S. and Allied forces to get to the fight and to fight effectively once there.”<sup>7</sup> Specifically, anti-access capabilities are directed at restricting the CSG and CVW’s movement and maneuver (M2), forcing them to operate further from the desired area of power projection. Area-denial capabilities are intended to complicate or obstruct the CVW’s ability to employ fires and command and control (C2) once within range.<sup>8</sup> In recent history, CSGs have comfortably projected power in global regions with limited A2/AD capabilities from close proximity of shore.<sup>9</sup> As a result of the proliferation of A2/AD capabilities by non-state actors

---

<sup>5</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 4.

<sup>6</sup> Chuck Hagel, *Quadrennial Defense Review 2014*. (Washington, DC: U.S. Department of Defense, March 4, 2014), 61.

<sup>7</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 2.

<sup>8</sup> *Ibid.*, 2.

<sup>9</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 25.

and China and Iran's continued development of advanced air, sea, and space denial systems, this is no longer the case.

Freedom of navigation is a fundamental pillar of power projection. China and Iran are working arduously to make the price of access in the Western Pacific and Persian Gulf too costly for U.S. Joint Forces.<sup>10</sup> Additionally concerning is the focus of China and Iran's A2/AD development. Admiral Locklear, Commander USPACOM, stated that the capabilities "being pursued by the PLA go after, either directly or indirectly, what they perceive as potential U.S. vulnerabilities."<sup>11</sup> Iran, equally resolute in advancing their A2/AD capabilities, has the factor of space as an advantage. With considerably less area to influence, Iran is focused on advancing A2/AD capabilities that specifically deny forces access and use of the Persian Gulf through the Straits of Hormuz.<sup>12</sup> General Austin, Commander USCENTCOM, expressed concern regarding Iran's A2/AD capabilities by stating their actions as representative of "a very real and significant threat to the U.S. and our partner interests."<sup>13</sup>

Historically, the USN's ability to rapidly access global commons in order to project power ashore has greatly contributed to the superpower it is today.<sup>14</sup> The inability to operate in advanced A2/AD environments would not only undermine multinational operations, but

---

<sup>10</sup> Andrew Krepinevich, "Why AirSea Battle?," Center for Strategic and Budgetary Assessments. 19 February 2010, 7.

<sup>11</sup> Samuel J. Locklear, III. et al., *Hearing of the Senate Armed Services Committee: U.S. Pacific Command and U.S. Forces Korea*. (Washington, DC: U.S. Government Accountability Office, March 25, 2014), <http://www.pacom.mil/commander/statements-testimony/20140325-hearing-of-the-senate-armed-services-committee.shtml> (accessed April 27, 2014), 3.

<sup>12</sup> Andrew Krepinevich, "Why AirSea Battle?," Center for Strategic and Budgetary Assessments. 19 February 2010, 27.

<sup>13</sup> Lloyd J. Austin, *Statement of General Lloyd J. Austin III Commander U.S. Central Command before the House Armed Services Committee on the Posture of the U.S. Central Command*. (Washington, DC: U.S. Government Accountability Office, March 5, 2014), <http://www.centcom.mil/en/about-centcom-en/commanders-posture-statement-en> (accessed April 26, 2014), 12.

<sup>14</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), p. 1.

also degrade U.S. international alliances.<sup>15</sup> While it is essential to possess the ability to counter A2/AD capabilities to project power, it is equally important to provide strategic deterrence and stability. The balance of power in a particular region could easily impact relationships between countries, both militarily and politically.<sup>16</sup> Without the confidence of partner nations, Allies may choose the side of an adversary or utilize less effective means of self-defense, causing increased instability.<sup>17</sup> For these reasons, the ability of the USN to project power despite A2/AD challenges must be maintained as a military priority.

Unfortunately, as defense budget cuts and sequestration reduce the U.S. Joint Force's overall composition and delay delivery of key next-generation platforms, Combatant Commanders are faced with assuming higher levels of risk if they are unable to compensate for the gaps in size and strength of their force. This concern was evident in the 2014 Quadrennial Defense Review, as Secretary of Defense Chuck Hagel stated, "sequestration-level cuts would also lead to significant risk in the Department's ability to project power and to win decisively in future conflicts."<sup>18</sup> Additionally, in the FY2015 Department of the Navy (DON) Posture Statement, Admiral Greenert, Chief of Naval Operations (CNO), asserted, "our overall projection capability development would slow, reducing options and increasing our risk in assuring access."<sup>19</sup>

---

<sup>15</sup> U.S. Department of Defense. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge." (Washington, DC: U.S. Department of Defense, May 2013), 3.

<sup>16</sup> Ronald O'Rourke, "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," Congressional Research Service, September 5, 2013: 1-2.

<sup>17</sup> U.S. Department of Defense. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge." (Washington, DC: U.S. Department of Defense, May 2013), 3.

<sup>18</sup> Chuck Hagel, *Quadrennial Defense Review 2014*. (Washington, DC: U.S. Department of Defense, March 4, 2014), 55.

<sup>19</sup> Jonathan Greenert, *Statement of Admiral Jonathan Greenert U.S. Navy Chief of Naval Operations Before the House Armed Services Committee on FY 2015 Department of the Navy Posture*. (Washington, DC: U.S. Department of the Navy, March 12, 2014), [http://www.navy.mil/cno/12MAR14\\_DON\\_Posutre\\_CNO\\_Final\\_HASC.pdf](http://www.navy.mil/cno/12MAR14_DON_Posutre_CNO_Final_HASC.pdf) (accessed May 8, 2014), 11.



USN reductions due to the current fiscal environment cause “critical modernization programs [to] be broken” in addition to creating “deficiencies in the technological capability of our forces.”<sup>20</sup> Two specific platforms affected by the reduction in forces are the E2-D Advanced Hawkeye and the F-35C Lightning.<sup>21</sup> CVWs lacking the E2-D and it’s Navy Integrated Fire Control-Counter Air (NIFC-CA) system will incur additional C2 access challenges, whereas the delay of the F-35C, equipped with “advanced sensors, data sharing capability, and ability to operate closer to threats” will stunt the CVW’s ability to conduct coordinated fires in advanced A2/AD environments.<sup>22</sup> Consequently, CVWs must develop alternate methods of enhancing current power projection capabilities to account for the loss of these slow to mature technological advantages.

Over the past three years, multiple Joint Service concepts have been written supporting the DSG and addressing the changing global security environment with specific regard to A2/AD challenges. These concepts include the Capstone Concept for Joint Operation (CCJO): Joint Force 2020 (JF202), the Joint Operational Access Concept (JOAC), and the ASB Concept.<sup>23</sup> In the CCJO-JF2020, the Chairman of the Joint Chiefs of Staff (CJCS) describes his overarching vision of how U.S. Joint Forces with a reduced force structure will succeed in all missions delineated by the DSG, through Globally Integrated Operations (GIO).<sup>24</sup> In the JOAC, the CJCS addresses the specific mission of projecting

---

<sup>20</sup> Chuck Hagel, *Quadrennial Defense Review 2014*. (Washington, DC: U.S. Department of Defense, March 4, 2014), 55-56.

<sup>21</sup> Jonathan Greenert, *Statement of Admiral Jonathan Greenert U.S. Navy Chief of Naval Operations Before the House Armed Services Committee on FY 2015 Department of the Navy Posture*. (Washington, DC: U.S. Department of the Navy, March 12, 2014), [http://www.navy.mil/cno/12MAR14\\_DON\\_Posutre\\_CNO\\_Final\\_HASC.pdf](http://www.navy.mil/cno/12MAR14_DON_Posutre_CNO_Final_HASC.pdf) (accessed May 8, 2014), 11.

<sup>22</sup> Ibid, 11.

<sup>23</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 4.

<sup>24</sup> U.S. Office of the Chairman, Joint Chiefs of Staff. *Capstone Concept for Joint Operations: Joint Force 2020*, (Washington, DC: US Joint Chiefs of Staff, September 10, 2012), 3-4.

power despite A2/AD challenges through joint integration at every level.<sup>25</sup> Lastly, the ASB Concept provides a solution for effective joint operations in an advanced A2/AD environment and outlines methods for joint force development to meet the power projection needs of Combatant Commanders.<sup>26</sup>

### **THE AIR-SEA BATTLE CONCEPT**

*Air-Sea Battle mitigates access challenges by moving beyond simply de-conflicting operations in each war fighting domain toward creating the level of domain integration necessary to defeat increasingly varied and sophisticated threats.*  
- Secretary of Defense Leon Panetta (20 February 2012)

While the ASB Concept can be applied to all U.S. Services, it has specific implications for USN and USAF joint operations. Kobs asserts, “it is unclear exactly who the next enemy will be. It is clear, though, that if the next conflict is sea-based, it will require the unique global power projection of the US Air Force and Navy.”<sup>27</sup> Although the majority of the ASB Concept and its specific service implementation remain classified, the unclassified ASB Concept provides the adapted framework to synchronize the USN and USAF towards the common objective of “reducing risk and maintaining U.S. freedom of action.”<sup>28</sup>

As state and non-state actors attempt to challenge the USN’s ability to operate in A2/AD environments and increase the risk associated with projecting power, the appropriate interpretation and implementation of the ASB Concept lies at the heart of the solution.<sup>29</sup> A common misconception is that the ASB Concept relies on the development of new

---

<sup>25</sup> U.S. Office of the Chairman, Joint Chiefs of Staff, *Joint Operational Access Concept (JOAC)*, ver. 1.0. (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2012), i.

<sup>26</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 4,7.

<sup>27</sup> Daniel E. Kobs, *Airsea Battle: Can the Air Force and Navy Get Along?*. (Maxwell Air Force Base, Alabama: School of Advanced Air and Space Studies Air University, June 2011), 71.

<sup>28</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), i.

<sup>29</sup> *Ibid.*, i.

technologies in order to facilitate advanced tactics, techniques, and procedures (TTP), vice the integration of existing capabilities.<sup>30</sup> The risk of this misconception is that U.S. Joint Forces overlook the underlying purpose of the ASB Concept, which is the implementation of “existing force structure and informing the development of future force structure.”<sup>31</sup> Most importantly, implementation of the ASB Concept’s structured solution will ensure that the first time USN and USAF assets convene is on the training range and not on the battlefield.

The ASB Concept’s answer to operating in an advanced A2/AD environment is the development of “networked, integrated forces capable of attack-in-depth to disrupt, destroy, and defeat adversary forces.”<sup>32</sup> Networked forces are combined of people and equipment linked through interoperable procedures, command and control, and mission-organized elements to conduct cross-domain operations.<sup>33</sup> An integrated force is networked across multiple domains to conduct specific missions with pre-integrated capabilities.<sup>34</sup> To develop a CVW that is networked, integrated, and capable of attack-in-depth, joint training with the USAF must focus on cross-domain operations, multi-level integration, and incorporation of realistic A2/AD threat scenarios.

---

<sup>30</sup> Geoff Fein et al., “Getting to Grips with Air-Sea Battle,” *Jane’s International Defense Review* 46, no. 9 (Sep 01, 2013), <http://search.proquest.com/docview/1420051753?accountid=322> (accessed April 22, 2014), 2.

<sup>31</sup> Daniel R. McAuliffe, “Aiming Airsea Battle: An Operational Concept To Counter China’s Maritime Area Denial Capabilities,” (Newport: Naval War College, June 18, 2011), 57.

<sup>32</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 4.

<sup>33</sup> *Ibid.*, 4-5.

<sup>34</sup> *Ibid.*, 4-5.

## JOINT TRAINING IMPLEMENTATION

*The reality of force development is that about 80% of Joint Force 2020 is programmed or exists today. We do, however, have an opportunity to be innovative in two ways. We can significantly change the other 20% of the force, and we can change the way we use the entire force. While new capabilities will be essential, many of our most important advancements will come through innovations in training, education, personnel management, and leadership development.*<sup>35</sup>

- General Martin E. Dempsey, U.S. Army  
18<sup>th</sup> Chairman of the Joint Chiefs of Staff

### ***Cross-Domain Operations***

The U.S. military has executed joint operations for decades, providing combined arms through forces fighting side by side.<sup>36</sup> However, cross-domain operations rely heavily on joint integration and are achieved through “the complementary vice merely additive employment of capabilities in different domains such that each enhances the effectiveness and compensates for the vulnerabilities of the others.”<sup>37</sup> The CVW and USAF can no longer afford to integrate merely with the intent of force addition. Instead, they must identify capability gaps required to defeat A2/AD challenges and capitalize on other services’ strengths to bridge those gaps in an effort of force multiplication.<sup>38</sup> By incorporating joint training scenarios with the USAF that focus on cross-domain synergy, the CVW will be better prepared to project power as a networked and integrated force, capable of attack-in-depth against advanced A2/AD capabilities.

Although the U.S. military possesses strengths within individual service domains, in future conflicts it will be the “ability to project force across domains that will so often

---

<sup>35</sup> U.S. Office of the Chairman, Joint Chiefs of Staff. *Capstone Concept for Joint Operations: Joint Force 2020*, (Washington, DC: US Joint Chiefs of Staff, September 10, 2012), Forward.

<sup>36</sup> U.S. Office of the Chairman, Joint Chiefs of Staff, *Joint Operational Access Concept (JOAC)*, ver. 1.0. (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2012), 16.

<sup>37</sup> *Ibid.*, 14.

<sup>38</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 5.

generate our decisive advantage.”<sup>39</sup> An example of cross-domain operations employed by the USN and USAF was the release of an AGM-154C Joint Standoff Weapon on a moving ship that was being tracked by a USAF Joint Surveillance Radar Attack System (JSTARS).<sup>40</sup> This unique training scenario provides one of many possible solutions to compensate for the loss in C2 capability caused by the delay and reduction of the E2-D Advanced Hawkeye. Additionally, the CVW will have to find original methods of employing cross domain synergy to compensate for the loss in advanced fires capability created by the delay of the F-35C Lightning. By conducting joint training focused on cross-domain operations in C2 and fires, the CVW can improve on existing methods of employment and develop innovative ways to achieve cross-domain synergy vital to power projection in a challenging A2/AD environment.

Another bi-product of focused joint training on cross-domain operations is the identification of technical interoperability issues. The ability to identify these issues, specifically hardware incompatibility, would have been beneficial in 1995 during Operation DELIBERATE FORCE in Bosnia and Herzegovina. While employing a USAF GBU-15 “electro-optically guided” bomb within close range of a USN AGM-84 SLAM-ER, “electronic interference” resulted in the AGM-84 failing to guide and missing its intended target.<sup>41</sup> By training with the systems they will fight with, the CVW and USAF could work to either solve or mitigate these “friction points” so as not to affect future joint training or employment.<sup>42</sup>

---

<sup>39</sup> U.S. Office of the Chairman, Joint Chiefs of Staff. *Capstone Concept for Joint Operations: Joint Force 2020*, (Washington, DC: US Joint Chiefs of Staff, September 10, 2012), 7.

<sup>40</sup> Brendan P. Walsh, “Access Denied: Future Military Operations in an Anti-Access Environment,” (Newport: Naval War College, April 5, 2011), 9-10.

<sup>41</sup> Benjamin Lambeth, *Combat Pair The Evolution of Air-Force – Navy Integration in Strike Warfare*, (Santa Monica, CA: RAND, 2007), 95-96.

<sup>42</sup> *Ibid.*, 92.

One of the most significant challenges to technical interoperability while executing USN and USAF cross-domain operations is the ability to communicate via both radio and link.<sup>43</sup> As Vice Admiral Mark Fox, Deputy Commander, USCENTCOM stated in a recent interview, "I don't want to have to figure out how I am going to talk with the Air Force or Marines or Army on [the] first day of the war."<sup>44</sup> Many times, networks and communications have been developed for platform-specific purposes and not for inter-service missions.<sup>45</sup> Identification of these issues during planning and execution of cross-domain joint training will allow for the implementation of innovative solutions. Furthermore, jointly assessing technical interoperability with specific regards to communications and linked networks will be essential in implementing the ASB Concept.<sup>46</sup>

### ***Multi-level Integration***

A CVW's Fleet Response Plan (FRP) is comprised of four phases: Maintenance, Basic, Integrated, and Sustain. The Maintenance, Basic, and Integrated phases compose 80% of the CVW's training prior to deployment and occur over a 12-month timeframe.<sup>47</sup> In the Maintenance and Basic phase, the CVW participates in individual and unit-level training to provide a solid foundation of tactical readiness prior to the Integrated phase, which "combine[s] individual unit and staff warfare skill sets into a single cohesive strike group."<sup>48</sup> Additionally, CVW training during the Integrated Phase includes large force employment

---

<sup>43</sup> Geoff Fein et al., "Getting to Grips with Air-Sea Battle," *Jane's International Defense Review* 46, no. 9 (Sep 01, 2013), <http://search.proquest.com/docview/1420051753?accountid=322> (accessed April 22, 2014), 5.

<sup>44</sup> *Ibid.*, 1.

<sup>45</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 112.

<sup>46</sup> *Ibid.*, 88.

<sup>47</sup> U.S. Department of the Navy, Commander, Naval Air Force, Pacific. COMNAVAIRPACINST 3510.11C. (San Diego, CA: Naval Air Force, Pacific, December 10, 2012).

<sup>48</sup> U.S. Department of the Navy, Commander, U.S. Fleet Forces Command. COMUSFLTFORCOMINST 3501.3D FLEET TRAINING CONTINUUM INSTRUCTION. (Norfolk, VA: U.S. Fleet Forces Command, October 1, 2012), 3-2 – 3.5.

scenarios focused on “power projection training in strike warfare.”<sup>49</sup> The only joint FRP requirement for the CVW is to “be capable of joining and operating with Joint, Multi-national, and Interagency Forces” prior to completing the Integrated phase and deploying.<sup>50</sup> This results from Joint integration traditionally being the sole responsibility of the Combatant Commander.<sup>51</sup> However, to provide Combatant Commanders with a more networked and integrated joint force capable of projecting power despite A2/AD challenges, CVWs must execute joint training at all levels with the USAF and throughout all phases of the FRP.

The phased nature of the FRP allows for a building block approach to training in order to produce a CSG ready to deploy in support of the Combatant Commander’s needs. Early implementation of joint training at the tactical level allows for individual and unit-level comprehension of the current capabilities and limitations of the USAF. With this basic understanding, the CVW and USAF can strive towards procedural interoperability. Historically, USN and USAF have developed procedures for independent operations resulting in a minimal number of TTPs.<sup>52</sup> To develop TTPs for cross-domain operations, the CVW and USAF need to “identify key mission areas and tasks in which their units would operate in an integrated fashion.”<sup>53</sup> Procedural interoperability at every level is essential for future employment of CVW and USAF assets in cross-domain operations.<sup>54</sup>

---

<sup>49</sup> Commander, Naval Installations Command, last modified January 2014, [http://www.cnmc.navy.mil/regions/cnrsw/installations/nas\\_fallon/about/nsawc.html](http://www.cnmc.navy.mil/regions/cnrsw/installations/nas_fallon/about/nsawc.html).

<sup>50</sup> U.S. Department of the Navy, Commander, U.S. Fleet Forces Command. COMUSFLTFORCOMINST 3501.3D FLEET TRAINING CONTINUUM INSTRUCTION. (Norfolk, VA: U.S. Fleet Forces Command, October 1, 2012), 3-3 – 3-4.

<sup>51</sup> U.S. Department of Defense. “Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge.” (Washington, DC: U.S. Department of Defense, May 2013), 6.

<sup>52</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 113.

<sup>53</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 114.

<sup>54</sup> U.S. Office of the Chairman, Joint Chiefs of Staff. *Capstone Concept for Joint Operations: Joint Force 2020*, (Washington, DC: US Joint Chiefs of Staff, September 10, 2012), 10.

Once procedural interoperability is established, the CVW and USAF can develop effective TTPs capable of compensating for vulnerabilities and build upon each other's current capabilities in an A2/AD environment.<sup>55</sup> Frequent joint training will allow for a more proficient joint force, not only during critical training periods, but also while deployed in support of the Combatant Commander's needs. The employment of joint TTPs that enhance cross-domain synergy at lower levels will result in the proficiency necessary to perform at higher operational tempos.<sup>56</sup> Finally, the CVW and USAF's ability to operate jointly and effectively under pressure will allow them to take advantage of opportunities to exploit enemy weaknesses in advanced A2/AD environments.<sup>57</sup>

As U.S. Congressman J. Randy Forbes, Chairman of the House Armed Service Committee's Seapower and Projection Forces Subcommittee, stated, "If we just do training but we don't do the joint training, we can't do the Air-Sea Battle concept."<sup>58</sup> The CVW must work early and often to establish consistent joint training relationships with the USAF throughout their FRP.<sup>59</sup> The application of the ASB Concept to the CVW's FRP through an understanding of current inter-service capabilities, alignment of procedural interoperability, the development of joint TTPs, and an increase in operational tempo through proficiency will provide the Combatant Commander with a flexible, pre-integrated joint force capable of reacting immediately should the need to project power arise.<sup>60</sup>

---

<sup>55</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 113-114.

<sup>56</sup> U.S. Office of the Chairman, Joint Chiefs of Staff, *Joint Operational Access Concept (JOAC)*, ver. 1.0. (Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2012), 16.

<sup>57</sup> *Ibid.*, 16.

<sup>58</sup> Geoff Fein et al., "Getting to Grips with Air-Sea Battle," *Jane's International Defense Review* 46, no. 9 (Sep 01, 2013), <http://search.proquest.com/docview/1420051753?accountid=322> (accessed April 22, 2014), 7.

<sup>59</sup> U.S. Department of Defense. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge." (Washington, DC: U.S. Department of Defense, May 2013), 12.

<sup>60</sup> U.S. Department of Defense. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge." (Washington, DC: U.S. Department of Defense, May 2013), 9.



### ***Realistic A2/AD Threat Scenarios***

To train effectively, the CVW must understand not only how their current capabilities will be affected by advanced A2/AD threats, but also be able to counter them successfully in combat.<sup>61</sup> For this reason, it is essential that the CVW incorporate joint training with the USAF to include realistic A2/AD threat scenarios throughout their FRP.<sup>62</sup> Unfortunately, many joint TTPs in existence today were developed for use in permissive A2/AD environments.<sup>63</sup> Through enhanced joint training scenarios representative of current and projected theater A2/AD threats, the CVW can develop joint TTPs and build proficiency required to conduct fires with coordinated M2.

The use of electronic warfare will be critical to the CVW's ability to degrade and defeat enemy A2/AD capabilities on the battlefield.<sup>64</sup> With the development of advanced enemy Integrated Air Defense Systems (IADS), the USN will no longer have the advantage of "undisputed localized air superiority."<sup>65</sup> As a result, the effective employment of fires will depend heavily on the "synergistic employment" of strike and electronic warfare assets.<sup>66</sup> In the past, there has been insufficient joint training and planning involving the denial of the electro-magnetic spectrum.<sup>67</sup> With the changes in the global A2/AD environment, the CVW and USAF must incorporate joint training representative of electro-magnetic spectrum threats they may encounter in order to project power in combat. Moreover, through integrating

---

<sup>61</sup> U.S. Department of Defense. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenge." (Washington, DC: U.S. Department of Defense, May 2013), 10.

<sup>62</sup> Ibid., 10.

<sup>63</sup> Ibid., 12.

<sup>64</sup> Jonathan Greenert, "Navy, 2025: Forward Warfighters," *United States Naval Institute*. Proceedings 137, no. 12 (December, 2011): 23.

<sup>65</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 26-27.

<sup>66</sup> Ibid., 83-84.

<sup>67</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 29.

electronic warfare in joint training against realistic threats, the CVW and USAF will identify gaps in current capabilities and methods of compensation through cross-domain synergy.

In a recent interview, Peter Bechtel, U.S. Army Director of Capabilities, Integration, Prioritization, and Analysis, stated, "Operating through degraded environments is one big aspect to our potential vulnerability."<sup>68</sup> U.S. adversaries employing advanced A2/AD capabilities are aware of how heavily the U.S. Joint Forces rely on Global Positioning Systems (GPS) and communications.<sup>69</sup> For this reason, the CVW can expect to be forced to operate in an environment where one or all of these capabilities are degraded.<sup>70</sup> Operating in environments where GPS is denied or degraded will severely impact the CVW's ability to conduct M2, C2, and fires.<sup>71</sup> GPS affects not only the navigational ability of CVW assets, but also a large number of their munitions.<sup>72</sup> Lack of GPS additionally limits C2 by degrading networks used to communicate information between both CVW and USAF assets. Through operating in realistic joint training scenarios, the CVW and USAF can devise TTPs that will enhance operations in a degraded environment.<sup>73</sup> Realistic and focused joint training scenarios throughout the CVW's FRP will result in the necessary proficiency required to meet the Combatant Commander's needs and address A2/AD challenges.

---

<sup>68</sup> Geoff Fein et al., "Getting to Grips with Air-Sea Battle," *Jane's International Defense Review* 46, no. 9 (Sep 01, 2013), <http://search.proquest.com/docview/1420051753?accountid=322> (accessed April 22, 2014), 2.

<sup>69</sup> Daniel Goure, "A New Kind of CARRIER AIR WING," *United States Naval Institute. Proceedings* 138, no. 9 (September, 2012): 3-4.

<sup>70</sup> *Ibid.*, 3-4.

<sup>71</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 33.

<sup>72</sup> *Ibid.*, 33.

<sup>73</sup> *Ibid.*, 87.

## COUNTERARGUMENT

*By inflicting damage, he can make it impossible for the enemy to draw near.*

- Sun Tzu, The Art of War, Chapter 6, Verse 3

Many argue that there is no amount of training the CVW can conduct that will provide Combatant Commanders with a CSG capable of projecting power despite A2/AD challenges. The fact remains that the pure technological advantages of advanced A2/AD systems in the form of precision strike threats make the CSG especially vulnerable to attack. In “At What Cost a Carrier?” CAPT Henry J. Hendrix, USN (Ph.D.) writes, “Although U.S. Navy and Air Force leaders have coordinated their efforts to develop the means to operate in an anti-access/area denial (A2/AD) environment by disrupting opposing operations, the risk of a carrier suffering a mission kill . . . remains high.”<sup>74</sup> For example, China’s current Anti-Surface Cruise and Ballistic Missiles would threaten the CSG and CVW out to more than 1,200 nautical miles, “pushing aircraft carriers far beyond the maximum unrefueled ranges of their current and projected strike aircraft.”<sup>75</sup> Furthermore, the greatest threat to the CSG would be China’s ability to launch “saturation strikes” in order to overcome their entire defensive network.<sup>76</sup> Ultimately, the ASB Concept provides no solution to the vulnerability of the CSG and the CVW; it only serves as a “stopgap countermeasure” while the U.S. Joint Forces wait for alternate methods of defeating advanced A2/AD technologies.<sup>77</sup>

---

<sup>74</sup> Henry J. Hendrix, *At What Cost a Carrier?*. (Washington, DC: Center for a New American Security, March 2013), 8.

<sup>75</sup> Jan Van Tol et al., *AirSea Battle: A Point-of-Departure Operational Concept*, (Washington, DC: Center for Strategic and Budgetary Assessments, 2010), 19.

<sup>76</sup> Harry J. Kazianis, “No Game Changer, but a Great Complicator: China’s DF-21D ASBM,” China Policy Institute Blog, September 29, 2013, <http://blogs.nottingham.ac.uk/chinapolicyinstitute/2013/09/29/no-game-changer-but-a-great-complicator-chinas-df-21d-asbm/> (accessed May 10, 2014).

<sup>77</sup> David Gompert et al., “Escalation Cause How the Pentagon’s new strategy could trigger war with China,” *Foreign Policy*, August 2, 2013, [http://www.foreignpolicy.com/articles/2013/08/02/escalation\\_cause\\_air\\_sea\\_battle\\_china](http://www.foreignpolicy.com/articles/2013/08/02/escalation_cause_air_sea_battle_china) (accessed May 10, 2014).

## REBUTTAL

*In no other profession are the penalties for employing untrained personnel so appalling or so irrevocable as in the military.*

- General Douglas MacArthur (1933)

While it is true that advanced A2/AD capabilities place the CSG and its CVW at higher levels of risk, this is not the first time U.S. Joint Forces have encountered the problem of projecting power in the face of technologically advanced A2/AD systems.<sup>78</sup> As Goure states, “The Red Army was postured for the ultimate AA/AD operation, including a massive air and missile assault — employing chemical weapons — on all our forward bases and using hundreds of submarines and aircraft to sweep the seas of our ships.”<sup>79</sup> Although the technological capabilities of today’s A2/AD threats are on an escalated level when compared with those of the Cold War, the fact remains that “through a combination of dispersal, threat defense, flexibility, and the assumption of a level of operational risk” the U.S. Joint Forces were able to accomplish the mission of projecting power.<sup>80</sup> In the meantime, the USN cannot ignore the operational challenges of projecting power despite A2/AD threats and must ready the CSG to operate optimally should they be called upon to do so. The CVW’s incorporation of the ASB Concept through enhanced joint training with the USAF provides a solution for maintaining access to the world’s oceans and arms Combatant Commanders with a more flexible, integrated, and operationally proficient joint force.

---

<sup>78</sup> Ronald O'Rourke, “China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress,” Congressional Research Service, September 5, 2013: 70.

<sup>79</sup> Daniel Goure, “The Overblown Anti-access, Area Denial Threat,” Lexington Institute, October 23, 2009, <http://www.lexingtoninstitute.org/the-overblown-anti-access-area-denial-threat> (accessed April 12, 2014).

<sup>80</sup> Matthew E. Davin, “Anti-Access/Area Denial: Time To Ditch the Bumper Sticker?,” (Newport: Naval War College, May 20, 2013), 5-6.

## **CONCLUSION**

As a result of the U.S. military's reduction in overall force composition, delayed future technology, and the increased threat of A2/AD capabilities in the global environment, the USN must develop innovative methods of projecting power despite A2/AD challenges. The CVW's incorporation of the ASB Concept through enhanced joint training with the USAF is essential to provide the Combatant Commander with a CSG capable of supporting this mission. Through joint training focused on cross-domain operations, multi-level integration, and the incorporation of realistic A2/AD threat scenarios, CVWs will develop the skills needed for attack-in-depth in advanced A2/AD environments. Although the technological advantages of today's A2/AD threats will place CVWs at higher risk, integrated joint training remains essential to mitigating this risk and conducting operations optimal for success in battle. Ultimately, the U.S. Joint Force's ability to adapt joint training to meet current economic and strategic challenges will ensure U.S. freedom of access and power projection in the global commons.

## **RECOMMENDATIONS**

The following recommendations, in priority order, ensure the CVW's ability to incorporate the ASB Concept through enhanced joint training with the USAF. First, Commander U.S. Fleet Forces and Air Combat Command must commit to an institutional alignment of joint force integration as an essential operational training requirement. USN Commanding Officers at every level must ensure the same alignment with their USAF counterparts. Second, Combatant Commanders must specifically request the need for CVWs that are pre-integrated with the USAF and capable of projecting power in advanced A2/AD environments. Third, Commander Naval Air Forces must revise the current FRP Instruction

to include integrated joint training requirements throughout the FRP, specifically during Advanced Readiness Programs (ARP), Air Wing Fallon (AWF) detachment, Composite Training Unit Exercise, and Joint Task Forces Exercise. Fourth, Commander Naval Air Forces must revise the current Type, Model, and Series Readiness and Resource Standards to include integrated joint training with the USAF. Fifth, Commander Naval Air Forces must reevaluate the current Fleet Air Combat Training Continuum Instruction to include integrated joint training with a focus on cross-domain operations. Finally, the Naval Strike and Air Warfare Center must implement integrated joint training focused on cross-domain operations and representative of advanced A2/AD environments during the CVW's ARP and AWF detachments.

## BIBLIOGRAPHY

- Austin Lloyd J. *Statement of General Lloyd J. Austin III Commander U.S. Central Command before the House Armed Services Committee on the Posture of the U.S. Central Command*. Washington, DC: U.S. Government Accountability Office, March 5, 2014, <http://www.centcom.mil/en/about-centcom-en/commanders-posture-statement-en> (accessed April 26, 2014).
- Cavas, Christopher P. "Reshaping the US Navy's Next Air Wing." *Defense News*, May 13, 2013, <http://search.proquest.com/docview/1356467946?accountid=322> (accessed March 16, 2014).
- Commander, Naval Installations Command. Last modified January 2014. [http://www.cnic.navy.mil/regions/cnrsw/installations/nas\\_fallon/about/nsawc.html](http://www.cnic.navy.mil/regions/cnrsw/installations/nas_fallon/about/nsawc.html).
- Davin, Matthew E. "Anti-Access/Area Denial: Time To Ditch the Bumper Sticker?" Newport: Naval War College, May 20, 2013.
- Fein, Geoff, Grace Jean, Caitlin Lee, and Daniel Wasserbly. "Getting to Grips with Air-Sea Battle." *Jane's International Defense Review* 46, no. 9 (Sep 01, 2013), <http://search.proquest.com/docview/1420051753?accountid=322> (accessed April 22, 2014).
- Foster, Richard A. "Improving Navy and Air Force Tactical Air Forces Integration." Maxwell Air Force Base, Alabama: Air Command and Staff College, April 1999.
- Gompert, David, Kelly Terrence. "Escalation Cause How the Pentagon's new strategy could trigger war with China." *Foreign Policy*, August 2, 2013, [http://www.foreignpolicy.com/articles/2013/08/02/escalation\\_cause\\_air\\_sea\\_battle\\_china](http://www.foreignpolicy.com/articles/2013/08/02/escalation_cause_air_sea_battle_china) (accessed May 10, 2014).
- Goure, Daniel. "A New Kind of CARRIER AIR WING." United States Naval Institute. *Proceedings* 138, no. 9 (September, 2012): 24-28.
- Goure, Daniel. "The Overblown Anti-access, Area Denial Threat." Lexington Institute, October 23, 2009, <http://www.lexingtoninstitute.org/the-overblown-anti-access-area-denial-threat> (accessed April 12, 2014).
- Greenert, Jonathan. "Navy, 2025: Forward Warfighters," United States Naval Institute. *Proceedings* 137, no. 12 (December, 2011): 18-23.
- Greenert, Jonathan. *Statement of Admiral Jonathan Greenert U.S. Navy Chief of Naval Operations Before the House Armed Services Committee on FY 2015 Department of the Navy Posture*. Washington, DC: U.S. Department of the Navy, March 12, 2014, [http://www.navy.mil/cno/12MAR14\\_DON\\_Posutre\\_CNO\\_Final\\_HASC.p](http://www.navy.mil/cno/12MAR14_DON_Posutre_CNO_Final_HASC.p) (accessed May 8, 2014).

- Hagel, Chuck. *Quadrennial Defense Review 2014*. Washington, DC: U.S. Department of Defense, March 4, 2014.
- Ham, Walter T. "Air Force, Navy Pilots Train Together Over Okinawa." US Fed News Service, Including US State News, Mar 14, 2009.  
<http://search.proquest.com/docview/470737967?accountid=322> (accessed April 22, 2014).
- Hendrix, Henry J. *At What Cost a Carrier?* Washington, DC: Center for a New American Security, March 2013.
- Kazianis, Harry J. "No Game Changer, but a Great Complicator: China's DF-21D ASBM." China Policy Institute Blog, September 29, 2013,  
<http://blogs.nottingham.ac.uk/chinapolicyinstitute/2013/09/29/no-game-changer-but-a-great-complicator-chinas-df-21d-asbm/> (accessed May 10, 2014).
- Kobs, Daniel E. *Airsea Battle: Can the Air Force and Navy Get Along?* Maxwell Air Force Base, Alabama: School of Advanced Air and Space Studies Air University, June 2011.
- Krepinevich, Andrew. "Why AirSea Battle?" Center for Strategic and Budgetary Assessments. 19 February 2010.
- Lambeth, Benjamin. *Combat Pair The Evolution of Air-Force – Navy Integration in Strike Warfare*. Santa Monica, CA: RAND, 2007.
- Locklear, Samuel J. III. *Statement of General Lloyd J. Austin III Commander U.S. Central Command before the House Armed Services Committee on the Posture of the U.S. Central Command*. Washington, DC: U.S. Government Accountability Office, March 25, 2014, <http://www.centcom.mil/en/about-centcom-en/commanders-posture-statement-en> (accessed April 27, 2014).
- Locklear, Samuel J. III, Scaparrotti Curtis. *Hearing of the Senate Armed Services Committee: U.S. Pacific Command and U.S. Forces Korea*. Washington, DC: U.S. Government Accountability Office, March 25, 2014,  
<http://www.pacom.mil/commander/statements-testimony/20140325-hearing-of-the-senate-armed-services-committee.shtml> (accessed April 27, 2014).
- McAuliffe, Daniel R. "Aiming Airsea Battle: An Operational Concept To Counter China's Maritime Area Denial Capabilities." Newport: Naval War College, June 18, 2011.
- O'Rourke, Ronald. "China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress," Congressional Research Service, September 5, 2013.



- Tangredi, Sam J. *Anti-Access Warfare*. Annapolis, MD: Naval Institute Press, 2013.
- U.S. Department of Defense. "Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges." Washington, DC: U.S. Department of Defense, May 2013.
- U.S. Department of Defense. *Sustaining U.S. Global Leadership: Priorities for 21<sup>st</sup> Century Defense*. Washington, DC: U.S. Department of Defense, January 2012.
- U.S. Department of the Navy, Commander, Naval Air Force, Pacific.  
COMNAVAIRPACINST 3510.11C. San Diego, CA: Naval Air Force, Pacific, December 10, 2012.
- U.S. Department of the Navy, Commander, U.S. Fleet Forces Command.  
COMUSFLTFORCOMINST 3501.3D FLEET TRAINING CONTINUUM INSTRUCTION. Norfolk, VA: U.S. Fleet Forces Command, October 1, 2012.
- U.S. Office of the Chairman, Joint Chiefs of Staff. *Capstone Concept for Joint Operations: Joint Force 2020*. Washington, DC: US Joint Chiefs of Staff, September 10, 2012.
- U.S. Office of the Chairman, Joint Chiefs of Staff. *Doctrine for the Armed Forces of the United States*. Joint Publication 1. Washington, DC: US Joint Chiefs of Staff, March 23, 2013.
- U.S. Office of the Chairman, Joint Chiefs of Staff. *Joint Operational Access Concept (JOAC)*, ver. 1.0. Washington, DC: U.S. Joint Chiefs of Staff, January 17, 2012.
- Van Tol, Jan, Mark Gunzinger, Andrew Krepinevich, and Jim Thomas. *AirSea Battle: A Point-of-Departure Operational Concept*. Washington, DC: Center for Strategic and Budgetary Assessments, 2010.
- Walsh, Brendan P. "Access Denied: Future Military Operations in an Anti-Access Environment" Newport, RI: Naval War College, April 5, 2011.